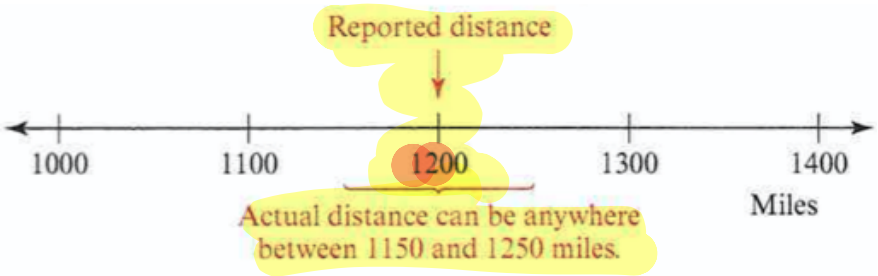
Figure 11.13

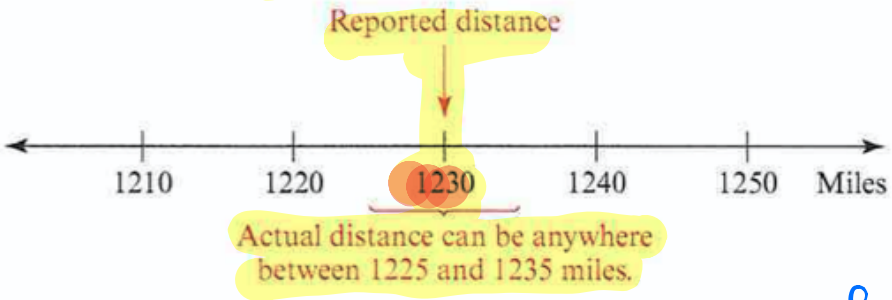
Interpreting a reported distance of 1200 miles.



2 significant digits

Figure 11.14

Interpreting a reported distance of 1230 miles.



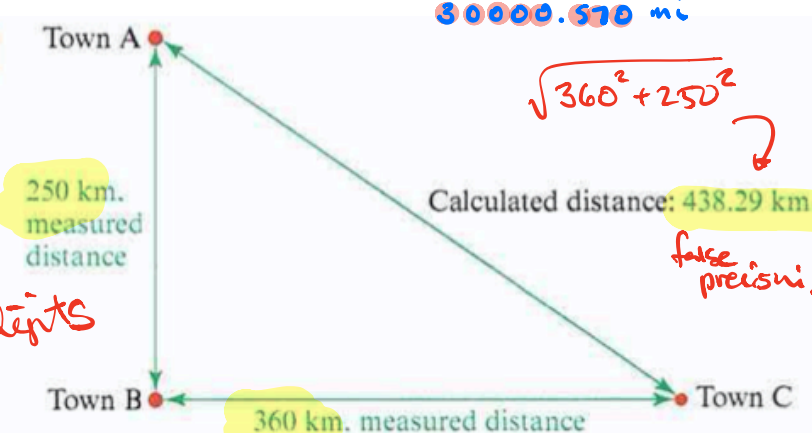
3 significant digits

- if no decimal place, then significant digits is everything up to a bunch of zeros.
- if there is a decimal, it's everything.

10050 mi
10000 mi
30000. mi
30000.570 mi

Figure 11.15

Calculating with measured distances.



started with 2 significant digits

$\sqrt{360^2 + 250^2}$

Calculated distance: 438.29 km.

false precision.

Round the calculated distance to fit with the rounding of the measured distances: 440 km

Practice Exercises for Section 11.3

1. What is the difference between reporting that an object weighs 2 pounds and reporting that it weighs 2.0 pounds?

2. If the distance between two cities is reported as 2500 miles, does that mean that the distance is exactly 2500 miles? If not, what can you say about the exact distance?

- reporting 2 lbs has 1 significant digit.

Actual weight can be anything between 1.5 & 2.5 lbs

- reporting 2.0 lbs has 2 significant digits

Actual weight can be anything between 1.95 & 2.05 lbs

(If we measure & get 2.1 lbs
we cannot report 2.0
we can report 2.1
or 2)

Exactly 2500 mi? No.

The exact distance is anything between

2450, 2550

because they rounded to hundreds place.

PROBLEMS FOR SECTION 11.3

1. One source says that the average distance from the earth to the moon is 384,467 kilometers. Another source says that the average distance from the earth to the moon is 384,000 kilometers. Can both of these descriptions be correct, or must at least one of them be wrong? Explain. 384,467 rounded to nearest thousand is 384,000, so both descriptions can be correct

2. If an object is described as weighing 6.20 grams, then is this the exact weight of the object? If not, what can you say about the weight of the object? Explain your answer in detail.

3. Tyra is calculating the distance from town A to town C. She is given that the distance from town A to town B is 120 miles, that the distance from town B to town C is 230 miles, that town B is due south of town A, and that town C is due east of town B. She calculates that the distance from town A to town C is 259.4224 miles. Should Tyra leave her answer like that? Why or why not? If not, what answer should she give? Explain. (You may assume that Tyra has calculated correctly.)

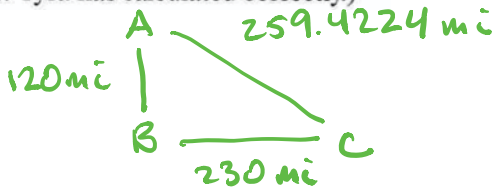
1) Yes, both can be correct, the sources chose different levels of precision to report.

because 384467 does round to 384000

2) No.

We only know its weight lies between ~~6.15 and 6.25~~ g 6.195 and 6.205 g;

3)



No because the inputs only have 2 significant digits, so reporting a final answer more precise than that is false precision.

Answer should have 2 sig dig,

so 259.4224 mi → 260 mi

Any number between those will round to the nearest hundredths place to 6.20

Class Activity 11F Reporting and Interpreting Measurements

CCSS SMP6

1. **a.** Does a food label that says "0 grams trans fat in 1 serving" mean that the food contains no trans fat? If not, what does it mean?

NO. 0g is rounded to the nearest gram, so can only say food has less than 0.5g trans fat per serving.

b. If a food label said "0.0 grams trans fat" would that mean there is no trans fat in the food?

NO. 0.0g is rounded to the nearest tenth of a gram, so can only say food has less than 0.05g trans fat per serving.

2. One source says that the average distance from the earth to the sun is 93,000,000 miles, and another source says that the average distance from the earth to the sun is 92,960,000 miles. Can both of these descriptions be correct, or must at least one of them be wrong? Explain.

Similar to #1 p513

YESTERDAY I LEARNED THE EARTH WEIGHED 5,972,200,000,000,000,000,000 TONS. SO IF YOU ADD IN TODAY'S SPACE DUST, IT MUST BE 5,972,200,000,000,000,000,043 TONS NOW.

No, the weight of the earth today is still 5,972,200,000,000,000,000,000
Because significant digits.